

550,755

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number  
**WO 2004/086692 A1**

(51) International Patent Classification<sup>7</sup>: **H04L 12/56**

(21) International Application Number:  
PCT/EP2004/050195

(22) International Filing Date: 24 February 2004 (24.02.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0306855.8 25 March 2003 (25.03.2003) GB

(71) Applicant (for all designated States except US): **IDEAS NETWORK LTD** [GB/GB]; 42 Horseguards Drive, Maidenhead Berkshire SL6 1XL (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BAUGHAN, Kevin** [GB/GB]; 42 Horseguards Drive, Maidenhead Berkshire SL6 1XL (GB). **CONSTANTINOU, Constantinos, Christofi** [GB/GB]; 9 Barrack Close, Sutton Coldfield, West Midlands B75 7HB (GB). **STEPANENKO, Alexander, Sergeevich** [RU/GB]; 156 Green Meadow Road, Selly Oak, Birmingham, West Midlands B29 4DR (GB). **ARVANITIS, Theodoros** [GB/GB]; 8 Naunton Close, Selly Oak, Birmingham, West Midlands B29 4DX (GB).

(74) Agents: **PERKINS, Sarah et al.**; Stevens Hewlett & Perkins, Halton House, 20/23 Holborn, London, Greater London EC1N 2JD (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

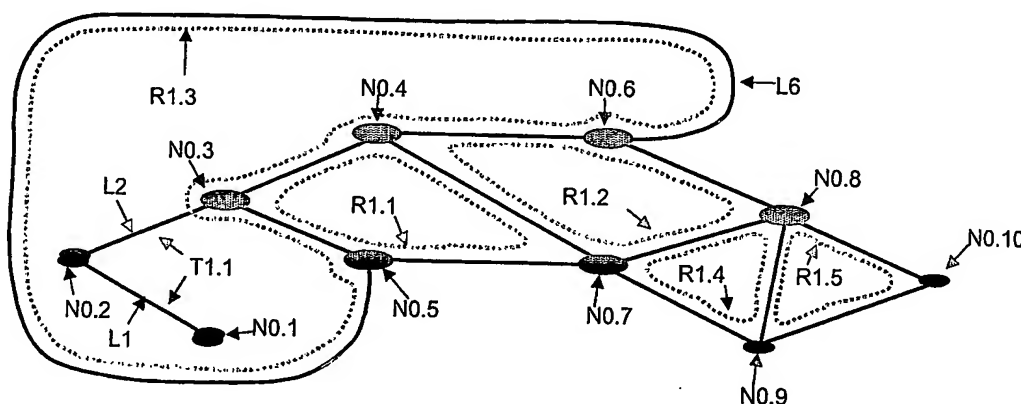
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: **TOPOLOGY AGGREGATION FOR HIERARCHICAL ROUTING**



(57) Abstract: A method of generating routing tables for a data communication network. With the method the network is defined in terms of a plurality of nodes (NO.1-NO.10) interconnected by links across which data travels. The method then simplifies the network into a deterministic structure through a series of recursive abstractions identifying one or more logical levels, with each logical level defining groupings of nodes based on closed rings (R1.1, R1.2, R1.3, R1.4, R1.5). The routing table is then populated with routes based on the logical levels that provide a deterministic path to each destination and the diversity of paths that can be used to follow that route based on the underlying closed rings in each lower logical level. The method thereby enables deterministic routing to be achieved whilst providing a rich set of diverse paths across the network for each route. The method is also particularly suited to both responding quickly to congestion or failure at a local part of the network as well as responding progressively to congestion or failure in distant parts of the network.

WO 2004/086692 A1



**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*